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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/589,525

**Applicant(s)**

GENECZKO ET AL.

**Examiner**

Constantine Hannaher

**Art Unit**

2884

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 August 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SE/US)  
Paper No(s)/Mail Date 20070212
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_

## **DETAILED ACTION**

### **Priority**

1. Applicant's claim for the benefit of a prior-filed application under 35 U.S.C. 119(e) or under 35 U.S.C. 120, 121, or 365(c) is acknowledged. Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 365(c) as follows:

If applicant desires to claim the benefit of a prior-filed application under 35 U.S.C. 365(c), a specific reference to the prior-filed application in compliance with 37 CFR 1.78(a) must be included in the first sentence(s) of the specification following the title or in an application data sheet. For benefit claims under 35 U.S.C. 120, 121 or 365(c), the reference must include the relationship (i.e., continuation, divisional, or continuation-in-part) of the applications.

If the instant application is a utility or plant application filed under 35 U.S.C. 111(a) on or after November 29, 2000, the specific reference must be submitted during the pendency of the application and within the later of four months from the actual filing date of the application or sixteen months from the filing date of the prior application. If the application is a utility or plant application which entered the national stage from an international application filed on or after November 29, 2000, after compliance with 35 U.S.C. 371, the specific reference must be submitted during the pendency of the application and within the later of four months from the date on which the national stage commenced under 35 U.S.C. 371(b) or (f) or sixteen months from the filing date of the prior application. See 37 CFR 1.78(a)(2)(ii) and (a)(5)(ii). This time period is not extendable and a failure to submit the reference required by 35 U.S.C. 119(e) and/or 120, where applicable, within this time period is considered a waiver of any benefit of such prior application(s) under 35 U.S.C. 119(e), 120, 121 and 365(c). A benefit claim filed after the required time period may be accepted if it is accompanied by a grantable petition to accept an unintentionally delayed benefit

claim under 35 U.S.C. 119(e), 120, 121 and 365(c). The petition must be accompanied by (1) the reference required by 35 U.S.C. 120 or 119(e) and 37 CFR 1.78(a)(2) or (a)(5) to the prior application (unless previously submitted), (2) a surcharge under 37 CFR 1.17(t), and (3) a statement that the entire delay between the date the claim was due under 37 CFR 1.78(a)(2) or (a)(5) and the date the claim was filed was unintentional. The Director may require additional information where there is a question whether the delay was unintentional. The petition should be addressed to: Mail Stop Petition, Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

If the reference to the prior application was previously submitted within the time period set forth in 37 CFR 1.78(a), but not in the first sentence(s) of the specification or an application data sheet (ADS) as required by 37 CFR 1.78(a) (e.g., if the reference was submitted in an oath or declaration or the application transmittal letter), and the information concerning the benefit claim was recognized by the Office as shown by its inclusion on the first filing receipt, the petition under 37 CFR 1.78(a) and the surcharge under 37 CFR 1.17(t) are not required. Applicant is still required to submit the reference in compliance with 37 CFR 1.78(a) by filing an amendment to the first sentence(s) of the specification or an ADS. See MPEP § 201.11.

## **Drawings**

2. The drawings are objected to because of the use of “um” where --µm-- is called for. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and

appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

**Specification**

3. The disclosure is objected to because of the following informalities: page 1 is obscured; paragraph [0029], the combination of short wave and medium wave is repeated.

Appropriate correction is required.

**Claim Objections**

4. Claim 3 is objected to because of the following informalities: the combination of short wave and medium wave is repeated. Appropriate correction is required.

**Claim Rejections - 35 USC § 112**

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 2 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The fabrication of an array by "LWIR processing" is vague as there is no established definition of such processing and indefinite as a process limitation does not provide a distinction to a claim of the manufacture category.

**Claim Rejections - 35 USC § 102**

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-8, 11, 13-15, 17, 19, and 20 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Marshall *et al.* (US005811815A).

With respect to independent claim 1, Marshall *et al.* discloses a multi-band imaging device (*e.g.*, Fig. 2) comprising an uncooled (column 1, line 10) microbolometer (column 5, line 28) focal plane array (column 10, lines 51-59) comprising a plurality of pixels **30** each of which further comprises at least one structure layer **32**, a detector layer **35**, and a medium wave absorber layer **33** (column 6, lines 47-50) and wherein each pixel **30** simultaneously detects at least two infrared bands (column 6, lines 10-22).

With respect to dependent claim 2, the array in the device of Marshall *et al.* is fabricated by LWIR processing (column 7, line 66 to column 8, line 9).

With respect to dependent claim 3, the bands detected in the device of Marshall *et al.* are selected from one of the recited group (MWIR/LWIR).

With respect to dependent claim 4, the structure layer **32** in the device of Marshall *et al.* is selected from one of the recited group in view of the silicon nitride (column 8, lines 26-28).

With respect to dependent claim 5, the medium wave absorber layer **33** in the device of Marshall *et al.* is selected from one of the recited group in view of the polymer (column 6, lines 54-57).

With respect to independent claim 6, Marshall *et al.* discloses an optical stack **30** for an

uncooled (column 1, line 10) microbolometer (column 5, line 28) device (Fig. 2) comprising a read out integrated circuit substrate **13**, a reflector **18** on a surface of the substrate, a plurality of layers fabricated by LWIR processing (column 7, line 66 to column 8, line 9) including an MWIR absorber **33**, a detector **35**, and at least one structure layer **32** of the recited type, and a gap **d<sub>1</sub>** between the reflector **18** and the plurality of layers. The stack **30** is part of the uncooled microbolometer and detects at least medium wave infrared radiation (column 6, lines 10-22).

With respect to dependent claim 7, the structure layer **32** in the stack of Marshall *et al.* is selected from one of the recited group in view of the silicon nitride (column 8, lines 26-28).

With respect to dependent claim 8, the stack of Marshall *et al.* further detects one of the recited bands (column 6, lines 10-22).

With respect to dependent claim 11, the medium wave absorber layer **33** in the stack of Marshall *et al.* is selected from one of the recited group in view of the polymer (column 6, lines 54-57).

With respect to independent claim 13, Marshall *et al.* discloses a multi-spectral infrared focal plane array (Fig. 2, also column 10, lines 51-59) comprising an uncooled (column 1, line 10) microbolometer (column 5, line 28) detecting at least two infrared bands (column 6, lines 10-22), a generally planar read out integrated circuit substrate base **13**, at least one generally planar microbridge **30** disposed approximately parallel to the base **13** and separated from it by a gap **d<sub>2</sub>**, and the microbridge **30** comprises a plurality of layers including at least one structural support layer **32**, a detector layer **35**, and selectively a medium wave absorber layer **33**.

With respect to dependent claim 14, the array of Marshall *et al.* is selectively programmable to at least one of the bands (Fig. 9 and column 11, lines 17-35).

With respect to dependent claim 15, the array of Marshall *et al.* is processed by LWIR

techniques (column 7, line 66 to column 8, line 9).

With respect to dependent claim 17, the bands detected in the array of Marshall *et al.* are selected from one of the recited group (MWIR/LWIR).

With respect to dependent claim 19, the medium wave absorber **33** in the array of Marshall *et al.* is selectively formed by a pattern etch (column 9, lines 3-25).

**Claim Rejections - 35 USC § 103**

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marshall *et al.* (US005811815A) in view of Oda (US006495829B1).

With respect to dependent claim 9, the structure layer **32** in the stack of Marshall *et al.* comprises at least one silicon nitride layer (column 8, lines 26-28). Oda shows (Fig. 5) a stack **200** which comprises at least one silicon dioxide layer **7**. In view of the effective performance of a silicon



dioxide layer in a stack for detection of medium wave infrared (column 11, lines 1-7) it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the stack of Marshall *et al.* to include at least one silicon dioxide layer as well.

With respect to dependent claim 12, the MWIR absorber **33** in the stack of Marshall *et al.* is a polymer (column 6, lines 54-57). Oda discloses a MWIR absorber **11** (Fig. 5) selected from at least one of the recited members (column 10, lines 44-45). In view of the effective performance of the titanium nitride layer **11** in a stack for detection of medium wave infrared it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the stack of Marshall *et al.* to specify that absorber **33** was, for example, TiN.

12. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marshall *et al.* (US005811815A) in view of Cole (US005286976A).

With respect to dependent claim 10, the detector **35** in the stack of Marshall *et al.* is a resistive film of high coefficient of resistance, and Marshall *et al.* specifically identifies United States Patent No. 5,286,976 as a guide to construction of the stack (column 7, line 66 to column 8, line 9). Cole identifies vanadium oxide as a suitable material for a detector layer **21** (column 1, line 56). In view of the explicit instruction of Marshall *et al.* to use the teachings of Cole in constructing the stack **30**, it would have been obvious to one of ordinary skill in the art at the time the invention was made to specify vanadium oxide as the resistive film of high coefficient of resistance required for detector **35**.

13. Claims 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marshall *et al.* (US005811815A) in view of Jack *et al.* (US005808350A).

With respect to dependent claim 16, although Marshall *et al.* does not illustrate an array in which at least one microbridge **30** lacks the medium wave infrared absorber **33**, Jack *et al.* shows

(Fig. 6a) that it is routine in a multi-spectral infrared focal plane array to omit the infrared absorber layer from at least one microbolometer cell (Fig. 1b). In view of the simultaneous but separate detection of different bands as suggested by Jack *et al.* (column 7, lines 3-9) it would have been obvious to one of ordinary skill in the art at the time the invention was made to omit the medium wave absorber layer 33 from at least one microbridge 30 in the array.

With respect to dependent claim 18, Jack *et al.* suggests this pattern (Fig. 6a) of paired microbridges, and in view of the simultaneous but separate detection of different bands as suggested by Jack *et al.* (column 7, lines 3-9) it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the array of Marshall *et al.* such that the microbridges 30 were paired, one with medium wave absorber 33 and one without.

#### **Conclusion**

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Constantine Hannaher whose telephone number is (571) 272-2437. The examiner can normally be reached on Monday-Friday with flexible hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

**/Constantine Hannaheh/  
Primary Examiner, Art Unit 2884**